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February 12, 1846.

GEORGE RENNIE, Esq., Treasurer and V.P., in the Chair.

"A Practical Extension of the application of the Law of Mortality announced by B. Gompertz, Esq., in the Philosophical Transactions for 1823." By A. M. Drach, Esq. Communicated by B. Gompertz, Esq., F.R.S.

In endeavouring to verify the theoretical law of mortality, announced by Mr. Gompertz, by means of constants derived from the results of the English census of 1841, which are contained in the sixth Annual Report of the Registrar-General, and which furnish an extended basis for computation, the author found the accordance between the two to be so remarkably close as to justify the assumption that Mr. Gompertz's formula expresses the true law of the decrement of human life. The paper is occupied with the analytical details of this investigation.

"On Spontaneous Nitrification." By C. F. Schoenbein, Professor of Chemistry in the University of Bâle. Communicated by Michael Faraday, Esq., D.C.L., F.R.S., &c.

From various facts adduced by the author, he is led to the conclusion, that during the slow combustion of phosphorus in moist atmospheric air, while ozone is produced, there is also formed a quantity of nitric acid; and that in all cases where both these compound bodies are simultaneously generated, however different may be the concomitant circumstances of the experiment, there is strong reason to suspect that the formation of the one is in some way connected with that of the other.

"On the Process of Etching, or Engraving, by means of Voltaic Electricity." By James H. Pring, M.D. Communicated by P. M. Roget, M.D., Sec. R.S.

The author, referring to an account which he gave of his method of etching on hardened steel plates, or other polished metallic surfaces, by means of electricity, in the Philosophical Magazine for November 1843, offers some additional observations relating to the theory of the process, and states some further practical remarks in its application to engraving. A specimen of a steel plate, and of a razor, on which ornamental designs were engraved by this method, were laid before the Society, in illustration.

February 19, 1846.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

James Matheson, Esq., William West, Esq., and John Wilson, M.D., were elected Fellows of the Society.

"On the Mechanism of Respiration." By Francis Sibson. Communicated by Thomas Bell, Esq., F.R.S.

This paper is almost entirely occupied with anatomical details, collected from an extensive series of dissections of the muscles and